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ABSTRACT

The author asserts that financial support of guidance activities, the job of the counselor, and counselors themselves will all have to change if computerized guidance support systems are to come into widespread use. The potential costs, benefits, and operating economics are discussed. Needed educational reorganization is dealt with on several levels: (1) the Information System for Vocational Decisions (ISVD) which is basically an inquiry system, will function optimally only in a school climate where inquiry is the major pedagogy; (2) an ISVD program will require that books, films and computer console arrangements be effectively coordinated; and (3) an ISVD program ideally will be available to people other than students in places other than schools. Counselor attitudinal changes needed for effective implementation of a computerized guidance program, as well as the resultant demands on counselor training, conclude the paper. (TL)

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INFORMATION SYSTEM FOR VOCATIONAL DECISIONS

Project Report No. 13

ECONOMIC, EDUCATIONAL, AND PERSONAL IMPLICATIONS OF IMPLEMENTING COMPUTERIZED GUIDANCE INFORMATION SYSTEMS

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OUTLINE OF

ECONOMIC, EDUCATIONAL, AND PERSONAL IMPLICATIONS OF IMPLEMENTING COMPUTERIZED GUIDANCE INFORMATION SYSTEMS[1]

Abstract

1.0 Financial, educational, and personal re-organizations are needed to sustain presently developing computerized guidance information systems.

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References

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1. Speech, American Personnel and Guidance Association, Detroit, Michigan, 7-11 April 1968. An expanded version of this paper is available under the same title as Project Report No. 13, Information System for Vocational Decisions, Harvard Graduate School of Education, 220 Alewife Brook Parkway, Cambridge, Mass. 02138.

ECONOMIC, EDUCATIONAL, AND PERSONAL IMPLICATIONS OF IMPLEMENTING COMPUTERIZED GUIDANCE INFORMATION SYSTEMS[1]

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1.0 Financial, Educational, and Personal Re-organizations Are Needed to Sustain Presently Developing Computerized Guidance Information Systems

I presume you understand that this is the third in a planned series of meetings dealing with computerized guidance support systems. The prior two meetings on computerized guidance support systems portend changes in guidance of considerable magnitude. However, financial support of guidance activities, the job of the counselor, and counselors themselves will all have to change if computerized guidance support systems are to come into widespread use.

The financial, job, and personal changes needed for further growth of computerized guidance information systems are not alone of considerable magnitude; they are also of considerable consequence for counselors. The financial changes needed will involve a very considerable increase in the level of public expenditure in the name of guidance. The educational changes needed will involve the shift of theory and activity in counseling from the provision of facts/data to the process of turning facts/data into

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1. Speech, American Personnel and Guidance Association, Detroit, Michigan, 7-11 April 1968.

information. The personal changes you counselors must make will include both acceptance of the challenge to seek more money for guidance services and actual change of your practice from that of providing facts/data to that of participating in an inquirer's generation of information.

I today address the financial, educational, and personal implications of our infantile-like computerized guidance information systems before the capability of fully operative systems exists rather than "tomorrow" after it and the resulting demand are with us. I do so in the spirit of supporting, not hindering, needed changes. I believe that the expected changes are essentially good, not bad or potentially harmful.

2.0 Economic and Personal Changes Needed to Sustain Emerging Computerized Guidance Information Systems

2.1 Potential Costs, Benefits, and Operating Economics of Computerized Guidance

I predict that computerized guidance support systems will continue, expand, and improve. However, in order for my prediction to become a self-fulfilling prophecy, the economy of guidance is one of three conditions which will have to undergo radical change. The outlines of the needed economic changes are at best only vaguely discernible in the present developmental condition of computerized guidance support systems as a whole. Therefore, I elect to continue my analysis of the needed economic changes in relation to an Information System for Vocational Decisions (hereafter ISVD), a type of system I know best and the system which will require the most radical change in both educational organization and practice and their finance.

The potential costs of an ISVD will depend primarily on the cost of time-shared computing connections and on what parts of an ISVD an inquirer elects to use and with what frequency he operates within an ISVD during a year. If an ISVD is used in its entirety about 25 hours a year by each inquirer it is likely that the annual direct operational cost per inquirer can be on the order of $20-30. Continual maintenance and updating of discs and files at a computing center with which remote console stations connect will probably add up to 1/10 of the operating cost.

An ISVD-type of system can of course be sub-divided and its parts can be marketed at lower annual expenditures per inquirer than those I have just mentioned. I deliberately noted expenditures as high as $20-30 more per inquirer per year just to let you know the size of the league in which I think we are playing with computerized guidance support systems. However, the benefits to individuality which can be expected from ISVD-like guidance support systems are sufficiently magnificent for us to recognize that they cannot be attained for "peanuts".

How can we expect that an ISVD will be financed? In the past several years I have become aware of the dual role which government plays in the provision of guidance services. If we remember that government operates in three conditions, local, state, and federal, then the government in its entirety practically single handedly provides support <u>both</u> for the education and for the employment of counselors (see Tiedeman and Field, 1965). Except for some private support of tuition in education and for some small

quantity of fees paid privately for service, guidance functions governmentally. This is a fact to which we counselors should attend more carefully. It has a profound influence on how far and how fast we and United States citizens can and will advance guidance in our civilization.

The fact that guidance is almost completely a governmental function means that its goals are predominantly set on the basis of economy, not primarily on the basis of quality and/or desirability. This fact retards the change of goals for guidance and the expansion of service for the citizens of the United States.

Although I suspect that the majority of support for guidance must remain governmental, I think that the quality and quantity of our services might change more rapidly if the purchase of services were put in the control of individuals, not governmental institutions such as schools and employment services. Marvin Adelson, System Development Corporation, implanted this idea in me (See Tiedeman and Dudley, 1967). For me, the idea finds potential implementation in the form of a career insurance system which I contend that private companies and the government should begin to develop. We have developed a Federal Old Age Assurance Program over the past several decades. However, at the present time, a citizen's career planning and its implementation is suffering as much as his retirement planning and implementation. I have therefore speculated on the possiblity and desirability of a Federal Career Satisfaction Assurance Program. Such a program should include annual payments to a citizen for career review such as would be possible in an ISVD and, when needed, tuition payments for career regeneration perhaps as many as seven times during a life, without

specific charge. Income for the program would be provided by premiums collected periodically during the actual work life just as social security contributions are now collected.

If private insurance companies and/or the federal government were to spawn programs such as this proposed Career Satisfaction Assurance Program, we could place money directly into the hands of citizens for their repetitive guidance and frequently continuing education. The existence of a large market of this kind could then markedly change the participation of the so-called Education Industry in the fortunes of guidance. Such a generating function in the economy of guidance would probably bring about a giant step in private investment in computerized guidance support systems which are ISVD-like. In the offing would then be individually rented computer discs, the equivalent of the safety deposit box, but in this case for personal autobiographies which would advance to the status of personally guiding mechanisms. Guidance would spring from the personal analysis of one's history as well as from the externally framed "view" of the future.

2.2 Investment: The Bearing of the Presently Uneconomic for the Sake of Probable Future Economies and Improvements. As you know, I predict that computerized guidance support systems will continue, grow, and improve. However, my statements about the economic hurdles standing before that eventuality should convince you that my prediction is by no means a certainty. My prediction can only become somewhat more likely if you counselors begin to sense the potential inherent in such support systems. I believe that the potential is there. However, we face a period in which we must today undertake a somewhat uneconomical form of support system for

the sake of nourishing what is only now infantile. On the other hand, if your use of the now developing computerized guidance support systems actually forms a sufficiently critical mass, I am convinced that private investment will be attracted by these support systems, thus insuring their continuation. Nevertheless, the issue is in present doubt. The issue can be resolved both by you counselors who must get your constituents to risk slightly higher cost today in the uncertain but likely hope of improved service and civilization tomorrow and by system purveyors who must market parts of an ISVD-like system in ways such that potential users can move gradually, but still definitely, toward use of the full system.

3.0 Educational and Personal Changes Needed to Sustain Emerging Computerized Guidance Information Systems

I have just argued that developmental computerized guidance systems can become operational systems if you present counselors take them into your hearts and tolerate some slight uneconomical procedures today, in return for some large likely gains tomorrow. However, if you decide to take on the task of cultivating the growth of this new infant now among us, there are also changes in your organization, yourselves, and your future colleagues which you will have both to countenance and to effect.

3.1 Educational Re-organizations Implied by an ISVD. The primary goal of an ISVD will be the provision of an information generating function which is specific to educational, vocational, and personal decision-making. The basic attitude required for cultivation of this information generating

function is that of inquiry. The computer support library of facts/data must be seen as a needed partial illumination but not as sufficient for completion of an internally organized guiding system. Completion or integration of an internally organized guiding system requires that the person as inquirer must be brought to invest what are originally another's facts/data with his own meanings, activities, and responsibilities, thereby additionally making them understood and appreciated.

The intent of an ISVD will be realized best in a school climate in which inquiry is the pedagogy primarily used by teachers (See Tiedeman, 1966). When the entire school climate favors inquiry, the inquiry required for operation of an ISVD will be consistent and mutually reinforcing. This is not to imply that an ISVD cannot operate in a neutral climate. The inquiry which will be required in an ISVD undoubtedly will be self-generating and self-supporting. However, the effect of an ISVD is not likely to be so pervasive and enduring if it does not occur in mutually supporting atmosphere in the entire endeavor of education. Thus counselors who believe in an ISVD enough to use it should also try to see that its inquiring atmosphere has generality in their schools.

An ISVD will primarily foster self development through practice and mastery of decision-making applied in the realms of education, vocation, and personal and family living. The theory of ISVD basically assumes both the differentiation of self in the three realms and the integration of the discontinuities thereby experienced because of widening personal awareness of one's own agency in one's development. A counselor will basically have to appreciate the ISVD theory if it is to work. Otherwise he will not

expect the ISVD outcome as he must if it is to be helped to appear. I think that counselors can find the theory of an ISVD quite compatible with their present overall philosophies and theories. However, an ISVD will certainly mean that a specific interest in educational and vocational decision-making must become an expected part of the counselor's functions. Unless the counselor believes so, he and an ISVD will be incompatible.

An ISVD will elaborate the presence of the guidance program in a library-like arrangement. Thus an ISVD will require that books, films and computer console arrangements be coordinated effectively. This requirement will again bear upon the counselor's belief in his functions and place of operation.

An ISVD will elaborate placement as a context in which choice behavior is momentarily surfaced in consciousness and becomes quite available for modification. This requirement will also influence counseling functions in an ISVD-type system.

Finally, an ISVD can be made available to people in places other than schools. This requirement will mean that counselors have to recognize their community through their aims rather than through their work locations. An ISVD should be exploited as a resource in schools, employment centers, industries, libraries, and, eventually, in homes as technology and economies permit. In sum then, counselors are going to have to re-examine many attitudes about their organizations, their philosophy and theory, and their functions if an ISVD-type system is to have opportunity for implementation.

3.2 Counselor Changes Implied in an ISVD. I found it impossible to separate the counselor from his setting as I described the educational

re-organization implied in an ISVD. Hence I have already made several comments on changes in counselor attitudes which might be required of some counselors if an ISVD is to work. In addition, I will in the immediately following section on changes in counselor preparation suggest several changes which will have profound consequence for the practice of counseling. These consequences will be felt by today's practicing counselor as well as by those yet to arrive on the scene of counseling. Therefore, I limit my remarks in this sub-section merely to two attitudes which you counselors will have to adopt if the computerized guidance support potential I favor is to arise.

One of the two attitudes which you counselors will have to adopt is that of accepting the computer's demands that data input be accurate and complete in terms of previously specified programs. Unfortunately, you will suffer this demand in a time when computer operation is itself far from mechanically and technically perfect. Therefore, the demand may well occasionally seem intolerable.

The second of the two attitudes which you counselors will have to adopt is that of not telling an inquirer a fact of educational or vocational opportunity but of attending to his process of information generation itself. I personally believe that you will find the process of information generation challenging and fulfilling so I do not anticipate difficulty on this score.

3.3 Counselor Education Changes Implied in an ISVD. I am acutely aware as I write of potential changes in counselor attitudes and theories which a system such as ISVD requires that the chief source of difficulty in acceptance may rest as much, if not more, with us counselor educators as with you practicing counselors. We counselor educators must take heed of an

ISVD in our future as well as in the counselor's future.

An ISVD has numerous implications for the preparation of counselors. I consider but a few of them here.

Inherent in an ISVD will be the concept of a personally-determined guidance system. This reference to "guidance" is far different from that of our texts of principles of guidance and from ordinary meanings of guidance. Hence, one of the requirements for change in counselor education which an espousal of an ISVD will bring is the superordination of the meaning of "guidance" to the technique of counseling (see Tiedeman and Field, 1965 for expansion of this argument). Counseling as a technique must be conceived as a means for the achievement of the goal of a personally-determined and understood guidance system, not as itself conveying that goal as is now presumed to be the case.

Inherent in an ISVD are the concepts of both a guidance testing support system and a guidance teaching support system. The computerization of the testing and test interpretation system as well as the designing of a guidance teaching system create new conditions in testing. The new conditions are:

1. the reduction in time between the receipt of an answer and the provision of an interpretive response;
2. the provision of capacity to know what has not been answered as well as what has been answered; and
3. the provision of testing in direct relationship to the design of the learning exercise itself.

All of the above conditions have existed since programmed instruction started.

However, there has not been a subsequent revision of test theory to accomodate these new conditions. The new conditions really have profound effect upon test theory and practice and these profound effects must find their way into our preparation of counselors for the future if we are to prepare persons to work with computerized guidance information systems.

The existence of an information generating system such as the ISVD places an additional burden on existing testing theory which also has implications for the manner in which counseling and personality theory should be taught. The information generating function is that of creating awareness not alone of the procedures for choosing, but also both of the choice process and of the self in the choice process. Consideration of this relationship among choosing procedures and choice and self processes requires re-examination of the relationship between the known and the measured as that relationship is now conceived in testing theory. In a revised theory, the knower as thinker must be brought into central focus in the relationship between the known and the measured (See Tiedeman and Field, 1968). The known and the person reciprocally act upon each other. As the knower comes to understand that interaction, he comes to understand himself and to appreciate his avenues for independent action in the interdependent human condition. Instructing counselors so that these realizations emerge will require revision in our courses on tests and measurements as well as in our courses on counseling and personality theory and assessment.

Finally, an ISVD will be embedded in computer technology. An ISVD will itself be designed so that the counselor does not need to know the computational side of that technology. However, an ISVD will allow counselors

as well as inquirers to create their own control systems for data processing, management, and retrieval. Therefore, our instruction of future counselors must incorporate at least that much preparation in computer technology into the education of the counselor. Actually more education of this kind could be beneficial although not necessary. The benefits will be those which accrue from understanding <u>why</u> something happens as well as from understanding <u>that</u> something happens. If counselors know the why of computer technology they will be in better position to improve an ISVD so that it functions more harmoniously with its theory th n it undoubtedly will in its earliest field phases.

4.0 Will Computerized Guidance Information Systems Become an Operational Reality?

I first stated that computerized guidance information systems are today a reality among us. I then indicated th.t this fact of existence could become a present reality of expanded and higher level service in guidance if the economy of guidance, the educational organization for guidance, as we were to change. A change in one without either of the others will not be enough to put us into the new era I envision.

It is not presently possible for me to assess well the likelihood that the three conditions simultaneously needed for bringing the computerized guidance information systems into an expanded and improved operational reality will exist simultaneously. In the economic realm, it is likely that a number of the subordinate functions in a computerized guidance information

system are sufficiently profitable in our present economy for them to come into being as separate entities. In addition, many computer technologists stand ready at any moment to consult with counselors and to construct individually tailored computerized guidance information systems. For these reasons I tend to think that the potential technological and economic barriers are probably less formidable than you counselors and we counselor educators will ourselves prove to be.

In the human realm, the barriers to my hope may exist because of several reasons. First you counselors must familiarize yourselves with computerized guidance information systems and with the possibilities for improved guidance service which they offer to students and other inquirers. Then you must form and advance the resolve necessary to generate the increased financial support which is required to augment present guidance services by the improved level of goal seeking which computerized guidance information systems will make possible. However, before you are likely to do this, you must bring yourself from a fear which I have frequently found that counselors associate with the computer. The computer is <u>not</u>, as you probably fear, a monster which will determine the lives of inquirers and put counselors out of work. Instead it is a potential slave which can bring the best of facts/data and their scientific processing directly to inquirers, so that you counselors can have as immediate an educational context as a teacher now does, one in which the process of reasoning can be brought to issue with the students you counsel. However, <u>our</u> use of the reasoning process contrary to the teacher's use of that process will be particularly directed toward its import for self, not subject, understanding and appreciation.

It will also be for the generation of knowledge about a sensible area in one's life space in which one can make a difference if one but acts in that area as if one were an agent of one's destiny. Your belief in such a magnificent possibility requires that you first make the computerized guidance information system <u>your</u> slave so that you can in turn be the professional who helps other inquirers make the computer <u>their</u> slaves. In order to do this job you will have to re-educate yourselves somewhat as I have indicated in the previous section and so will your mentors. Your mentors will in fact have to revise a considerable portion of their programs which are now preparatory for counseling.

I outline a difficult task. However, I am an optimist and am persuaded that we counselors need the challenge of a difficult task for a change. I think the computerized guidance information system offers us the one big opportunity of a decade to bring an important innovation into the endeavor of education. We have not done well at innovating during the past decade. Let's do a much better job in the decade now before us.

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